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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,671	09/15/2005	Hitoshi Ohsaki	SAEG129.008APC	9245

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EXAMINER	
CHAI, LONGBIT	

ART UNIT	PAPER NUMBER
2131	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/521,671

Applicant(s)

OHSAKI ET AL.

Examiner

Longbit Chai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/18/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Applicant's claim for benefit of foreign priority under 35 U.S.C. 119 (a) – (d) is acknowledged.

The application is filed on 9/15/2005 but is a 371 case of PCT/JP03/09155 application filed 7/18/2003 and has a foreign priority application filed on 7/19/2002.

Preliminary Amendment

2. Examiner acknowledges Preliminary Amendment for the claims filed 9/15/2005. Applicants have amended pending claims 3, 6, 9 and 12 and added new claims 13 – 16. The submitted amendments have been entered and made of record. Presently, pending claims are 1 – 16.

Claim Objections

3. Claim 2 is objected to because of the following informalities: "a set comprising terms" should be "a set of comprising terms" (or "a set of terms"). Appropriate correction is required.
4. Claims 1 – 16 are objected to because of the following informalities: "safety verification" is recommended as "security verification", which is considered as more specifically characterizing the subject matter of inventions.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1, 2, 4, 5, 7, 8, 10 and 11 are rejected under 35 U.S.C. 101 because the claimed subject matter fails to produce a real-world tangible result as output and is merely a non-functional or functional descriptive material because the claim limitation body is merely an abstraction of modeling such as axioms, equational tree automation, terms and the determination of whether or not a set accepted by the equational tree automaton is an empty set. The result appears to be a determination and such determination is not used in a practical application and therefore, the claims are directed to a non-statutory subject matter without producing a tangible result. Any other claims not addressed are rejected by virtue of their dependency.

6. Method claims 4 and 5 are rejected under 35 U.S.C. 101 because the claimed subject matter are not technologically and tangibly embodied and is merely an abstraction of modeling and therefore, the claims are directed to a non-statutory subject matter as not being tangible (same rationale of rejection as above). Any other claims not addressed are rejected by virtue of their dependency.

7. Medium claims 7 and 8 are rejected under 35 U.S.C. 101, which are directed to a non-statutory subject matter because, although the claims are identified as a "computer-readable recording medium containing a computer program, the claim limitations are recited as a series of program codes such as obtaining an input of a procedure,

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generating equational tree automation under set of axioms and determining whether a set accepted by a equational tree automation is an empty set or not, which appear to be directed to an abstract idea without limitation to a practical application. Thus, for at least this reason, claims 7 and 8 are directed to a non-statutory subject matter as not being tangible and concrete and it would not be eligible for patentability because it would be eligible for patentability if a practical application was present that produced a useful, concrete and tangible result upon execution of the instructions. Any other claims not addressed are rejected by virtue of their dependency.

8. Signal claims 10 and 11 are rejected under 35 U.S.C. 101, which are merely directed to a signal carrying instructions in a carrier wave and are not tangibly embodied in a manner so as to be executable (Also see the same reason of rejection set forth as above). Any other claims not addressed are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements because the claim preamble recites a type of device; however, the remainder of the claims does not support the preamble of claims as a device because the claim limitation body is merely an abstraction of modeling such as axioms, equational tree automation, terms and the determination of whether or not a set

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accepted by the equational tree automaton is an empty set, which are merely either a non-functional descriptive material or a functional descriptive material. Therefore, the omitting essential elements in the claims fail to make the claimed subject matters neither being tangibly embodied nor presenting a practical application that produced a useful, concrete and tangible result upon execution of the instructions (also referred to the rationale of 101 rejection as above).

Examiner notes similar rejections are also applied to the rest of the independent claims 4, 5, 7, 8, 10 and 11.

Claims 1, 2, 4, 5, 7, 8, 10 and 11 recite the very last limitation "equational tree automaton accepts said term to be verified". There is insufficient antecedent basis for this limitation in the claim because the "said term" is unclear to which previous "term" it is referred to – for example, "equational tree automaton which accepts said set of terms and a set of comprising terms derived from said set of terms". Therefore, the claim language is unclear and ambiguous. Any other claims not addressed are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraph of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1 – 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Monniaux et al. ("Abstracting Cryptographic protocols with Tree Automata", SRI International & Computer Science Lab, June 1999).

As per claim 2 and 5, Monniaux teaches a safety verification device of a reactive system represented by a set of function symbols, a set of rewriting rules, a set of axioms, a set of terms, and a term to be verified (Monniaux : Sec.2.1 & 2.1.1 & Page 6, 3rd para & Figure 3), said set of axioms being a set consisting only a commutative law and an associative law (Monniaux : Sec. 6.2, last para), and said safety verification device of a reactive system comprising:

a translation unit generating, under said set of axioms, a first equational tree automaton which accepts said set of terms (Monniaux : Sec.2.1 & 2.1.1 & 3.1);

a simulation unit generating, under said set of rewriting rules and said set of axioms and using said first equational tree automaton as initial data, a second equational tree automaton which accepts said set of terms (Monniaux : Page 3, 2nd para & Sec. 3.2, 3rd – 4th para) and

a set comprising terms derived from said set of terms; and a set operation unit determining whether or not said second equational tree automaton accepts said term to be verified (Monniaux : Page 7, Sec. 3.2, 3rd para).

As per claim 14 and 15, Monniaux teaches said set of function symbols is a set comprising function symbols representing encryption, decryption and communication

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processing as elements, said set of rewriting rules is a set comprising as an element a rule representing that encrypted information is returned to plaintext by decryption, said term to be verified is confidential information, and said set of terms is a set of knowledge of each of subjects that exchange confidential information, and a set of knowledge of a subject that monitors the information exchanged between said subjects (Monniaux : Sec. 4.3, 2nd para and Sec. 6.1 & 6.2).

As per claim 1, 4, 7 and 10, the claim limitations encompass the same scope at least as described in claim 2, as taught by Monniaux, and besides that, with the additional limitation of a set operation unit which generates a fourth equational tree automaton by associating said second equational tree automaton with a third equational tree automaton which accepts said set of terms to be verified and determines whether or not a set accepted by the fourth equational tree automaton is an empty set (Monniaux : Sec. 3.2, 3rd para and Page 8, Sec. 2.2, last para: (a) recursive operation on the equational tree automaton and (b) ϵ is defined as the "empty" sequence).

As per claim 3, 6, 9 and 12, Monniaux teaches said set of function symbols is a set comprising function symbols representing encryption, decryption and communication processing as elements, said set of rewriting rules is a set comprising as an element a rule representing that encrypted information is returned to plaintext by decryption, said term to be verified is confidential information, and said set of terms is a set of knowledge of each of subjects that exchange confidential information, and a set

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of knowledge of a subject that monitors the information exchanged between said subjects (Monniaux : Sec. 4.3, 2nd para and Sec. 6.1 & 6.2).

As per claim 8, 11, 13 and 16, the claim limitations are met as the same reasons as that set forth above in rejecting claims 1 and 14.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Longbit Chai whose telephone number is 571-272-3788. The examiner can normally be reached on Monday-Friday 8:00am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R. Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LBC



Longbit Chai
Examiner
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